

What is claimed is:

1. A composition for use in structural members, said composition comprising:
a polymer material selected from the group consisting of polyvinyl chloride
polyethylene and polypropylene in a concentration of 82% to 99% by weight of the mixture, said
polymer material being formed with internal closed cells ; and

glass fibers that are imbedded in the closed cell polyvinyl chloride, said glass
fibers being in the amount of 1% to 18% by weight of the composition.

2. The composition of Claim 1 wherein the glass fibers have a screen size in the
range of 1/64 inch to 1/4 inch.

3. The composition of Claim 1 wherein the glass fibers have a fiber diameter in the
range of 5 microns to 30 microns.

4. The composition of Claim 1 wherein the glass fibers have a fiber length in the
range of 50 microns to 900 microns.

5. The composition of Claim 1 wherein the glass fibers have a bulk density in the
range of 0.275 grams/cc to 1.05 grams/cc.

6. A method of making an extruded shape wherein said method comprises the steps
of:

blending polyvinyl chloride with glass fibers to make a polyvinyl chloride/glass
melt in which the glass fibers are imbedded in the polyvinyl chloride wherein the concentration
of said glass fibers is in the range of 1% to 18% by weight;

exposing the polyvinyl chloride/glass melt to a blowing agent to form voids in the
polyvinyl chloride/glass melt; and

extruding the polyvinyl chloride/glass melt having included voids to form an
extruded shape.

7. The method of claim 6 wherein said step of exposing the polyvinyl chloride/glass melt to a blowing agent includes combining a chemical blowing agent with polyvinyl chloride and with the glass fibers to form the feed mixture.

8. The method of claim 7 wherein the polyvinyl chloride/glass melt is contained in an extruder barrel and wherein said step of exposing the polyvinyl chloride/glass melt to a blowing agent further includes injecting a physical blowing agent through the extruder barrel into the polyvinyl chloride/glass melt.

~~9.~~ A method of making an extruded shape wherein said method comprises the steps of:

combining polyvinyl chloride, glass fibers, and a blowing agent to form a feed mixture;

providing the feed mixture to an extruder, said extruder increasing the temperature and pressure on the feed mixture to form a polyvinyl chloride/glass melt wherein the concentration of said glass fibers is in the range of 1% to 18% by weight and wherein the blowing agent chemically reacts to form gases that mix with the polyvinyl chloride to form closed cells in the polyvinyl chloride; and

extruding the polyvinyl chloride/glass melt having included cells through the port of a die to form an extruded shape having a profile that corresponds to the profile of the die port.

10. The method of Claim 9 wherein the blowing agent is a chemical blowing agent that is mixed with the polyvinyl chloride and glass fibers prior to formation of the polyvinyl chloride/glass melt, said chemical blowing agent cooperating with the polyvinyl chloride/glass melt to form voids in the polyvinyl chloride/glass melt and in the extruded shape.

11. The method of Claim 10 wherein the chemical blowing agent is azodicarbonamide.

~~12.~~ A method of making an extruded shape wherein said method comprises the steps of:

mixing polyvinyl chloride and glass fibers to form a feed mixture;
providing the feed mixture to an extruder that increases the temperature and pressure on the feed mixture to form a polyvinyl chloride/glass melt wherein the concentration of said glass fibers is in the range of 1% to 18% by weight;

mixing the polyvinyl chloride/glass melt with a physical blowing agent to form cells in the polyvinyl chloride/glass melt; and

extruding the polyvinyl chloride/glass melt having included cells through the port of a die to form an extruded shape having a profile that corresponds to the profile of the die port.

13. The method of Claim 12 wherein the blowing agent that is mixed with the polyvinyl chloride/glass melt is carbon dioxide.

14. The method of Claim 12 wherein the blowing agent that is mixed with the polyvinyl chloride/glass melt is nitrogen.

15. The method of Claim 12 wherein the blowing agent that is mixed with the polyvinyl chloride/glass melt is from the chlorofluorocarbon family of gases.

16. The method of Claim 12 wherein the blowing agent that is mixed with the polyvinyl chloride/glass melt is from the butane family of gases.

~~17.~~ A method of making an extruded shape wherein said method comprises the steps of:

blending polyvinyl chloride with glass fibers to make a polyvinyl chloride/glass melt in which the concentration of said glass fibers in said melt is in the range of 1% to 18% by weight;

mixing the polyvinyl chloride/glass melt with a blowing agent that forms voids in the polyvinyl chloride/glass melt; and

extruding the mixture of the polyvinyl chloride/glass melt with included voids to form an extruded shape that also includes internal voids.

18. A composition for use in extruding structural shapes, said composition being made according to the steps comprising:

providing a feed mixture to an extruder, said feed mixture including polyvinyl chloride and glass fibers, said polyvinyl chloride being in an amount of about 82% to 99% by weight of the mixture and said glass fibers being in an amount of about 1% to 18% by weight of the mixture;

compressing said feed material in the extruder to increase the pressure and temperature of the feed material to form a polyvinyl chloride melt having glass fibers mixed therein;

mixing the polyvinyl chloride/glass melt with a blowing agent to establish closed voids within the melt;

extruding the melt through a die; and

cooling the extruded material to form a solid composition.

19. The composition that is made according to the method of Claim 18 wherein said blowing agent is a compressed gas that is inert to the polyvinyl chloride and glass fibers and that is injected into the extruder to mix with the polyvinyl chloride/glass melt.

20. The composition that is made according to the method of Claim 19 wherein said injected blowing agent is nitrogen.

21. The composition that is made according to the method of Claim 19 wherein said injected blowing agent is carbon dioxide.

22. The composition that is made according to the method of Claim 19 wherein said injected blowing agent is in the family of butanes.

23. The composition that is made according to the method of Claim 19 wherein said injected blowing agent is in the family of chlorofluorocarbons.

24. The composition that is made according to the method of Claim 18 wherein the blowing agent is a chemical blowing agent that is included as an ingredient in the feed mixture of polyvinyl chloride and glass, said chemical blowing agent being in the amount of 0.5% to 3% by weight of the feed mixture.

25. The product made according to the method of Claim 24 wherein the chemical blowing agent is azodicarbonamide.

26. The product made according to the method of Claim 24 wherein the chemical blowing agent is sodium bicarbonate.

27. The product made according to the method of Claim 24 wherein the chemical blowing agent is citric acid.

28. The product made according to the method of Claim 24 wherein the chemical blowing agent is at least two compounds selected from the group consisting of azodicarbonamide, citric acid, and sodium bicarbonate.